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PRECISA INSTRUMENTS AG

CLAIMS

1. Mobile phone (1) comprising:

- communication means (3, 5) for communicating via a telephone communication network (40), the telephone communication network (40) comprising a plurality of stationary base stations (41, 42, 43, 44);
- detection means (3) for detecting both a strength value corresponding to the strength of a signal (61) received from the present base station (44) and an identification code of the present base station (44);
- position information reception means (2, 4) for continuously or intermittently receiving an information signal (60) of a satellite-based positioning system (31, 32, 33);
- first computation means (2) for continuously or intermittently computing the current position of the mobile phone (1) based on the signal (60) received by the position information reception means (2, 4); and
- first storage means (20) for storing the positions computed by the first computation means (2) as first position values;

characterised in that the mobile phone further comprises

- second computation means (6) for continuously or intermittently computing the current position of the mobile phone (1) based on the strength value and the identification code detected by the detection means (3); and
- second storage means (20) for storing the positions computed by the second computation means (6) as second position values.

2. Mobile phone (1) according to claim 1,
characterised in that
the detection means (3) is further adapted for detecting the strength values of signals (61; 62) received from adjacent base stations (41, 42, 43) and the identification codes of adjacent base stations (41, 42, 43; 51, 52); and
the second computation means (6) is further adapted to use all strength values and all identification codes detected by the detection means (3) for computing the current position of the mobile phone (1).

3. Mobile phone (1) according to claim 1 or 2,
characterised in that the mobile phone (1) further comprises
- motion calculation means (6) for calculating a direction and velocity of motion of the mobile phone (1) based on at least two first position values and/or two second position values.

4. Mobile phone (1) according to one of the preceding claims,
characterised in that the mobile phone (1) further comprises
- position message compiling means (6) for compiling a position message comprising the most current position values computed by the first and second computation means (2, 6);
wherein the communication means (3, 5) is adapted to send the position message via said telephone communication network (40).

5. Mobile phone (1) according to claim 4,
characterised in that
the position message compiling means (6) is further adapted to compile a motion message comprising the

direction and velocity of motion calculated by the motion calculation means,

wherein the communication means (3, 5) is adapted to send the motion message together with the position message via said telephone communication network (40).

6. Mobile phone (1) according to claim 4 or 5,

characterised in that

the position message compiling means (6) is further adapted to compile a position history message comprising former position values computed by the first and second computation means (2, 6),

wherein the communication means (3, 5) is adapted to send the position history message together with the position message via said telephone communication network (40).

7. Mobile phone (1) according to one of the preceding claims,

characterised in that the mobile phone (1) further comprises

- status detecting means (6) for detecting settings and status of the mobile phone (1); and
- status message compiling means (6) for compiling a status message comprising the settings and status information detected by the status detecting means (6);

wherein the communication means (3, 5) is adapted to send the status message via said telephone communication network (40).

8. Mobile phone (1) according to one of the preceding claims,

characterised in that the mobile phone (1) further comprises

- status setting means (6) for setting settings and status of the mobile phone (1);

wherein the status setting means (6) are adapted to set the settings and status of the mobile phone (1) based on a message received via the telephone communication network (40), the message comprising an authorisation code.

9. Mobile phone (1) according to one of the claims 4 to 8, **characterised in that**
the position message and/or motion message and/or status message is sent to a service centre (70) based on a request of the service centre (70) received by the communication means (3, 5) of the mobile phone (1) via the telephone communication network (40).

10. Mobile phone (1) according to one of the claims 4 to 9, **characterised in that**
the position message and/or motion message and/or status message is sent to an authorised person based on a request of the authorised person received by the communication means (3, 5) via the telephone communication network (40).

11. Mobile phone (1) according to claim 9 or 10, **characterised in that**
the request is filed as a request message which comprises an authorisation code.

12. Mobile phone (1) according to claim 11, **characterised in that**
the request is filed as a request message which further comprises a message identification code for identifying the requested message.

13. Mobile phone (1) according to claim 11 or 12, **characterised in that**

the request is filed as a special format short message service message; and

the position message and/or motion message and/or status message is filed in the short message service format.

14. Mobile phone (1) according to one of the claims 4 to 10,

characterised in that the mobile phone (1) further comprises

- an emergency button (25);

wherein the position message and/or motion message and/or status message is automatically sent to a service centre (70) and/or an emergency call number and/or an authorised person based on an operation of the emergency button (25).

15. Mobile phone (1) according to one of the claims 9 to 14,

characterised in that the phone (1) phone further comprises

- an emergency button (25); and
- alarm mode performing means (6), wherein the alarm mode performing means (6) is adapted to:

terminate any telephone connection besides a telephone connection with a service centre (70) or an emergency call number or an authorised person;

send the position message and/or motion message and/or status message to the service centre and/or the emergency call number and/or the authorised person; and

automatically answer a phone call of the service centre (70) and/or an emergency call number and/or an authorised person;

based on an operation of the emergency button (25).

16. Mobile phone (1) according to claim 15,

characterised in that the mobile phone (1) further comprises

- a hands free set means (12, 13, 15);

wherein the alarm mode performing means (6) is further adapted to automatically activate the hands free set means (12, 13, 15) based on an operation of the emergency button (25).

17. Mobile phone (1) according to claim 15 or 16,

characterised in that

the alarm mode performing means (6) is further adapted to

- emit an alarm signal via a load speaker (14, 15, 16) of the mobile phone (1) based on an operation of the emergency button (25).

18. Mobile phone (1) according to claim 15, 16 or 17,

characterised in that

the alarm mode performing means (6) is further adapted to

- disable any keys (10) or touchscreen (11) of the mobile phone (1) based on an operation of the emergency button (25).

19. Mobile phone (1) according to one of the claims 15 to 18,

characterised in that

the alarm mode performing means (6) is further adapted to

- resend the position message and/or motion message and/or status message to the service centre (70) and/or an emergency call number and/or an authorised person if no call is received from the service centre (70) and/or the emergency call number and/or an authorised person in a first predetermined time period after operation of the emergency button (25).

20. Mobile phone (1) according to one of the claims 15 to 19,

characterised in that

the alarm mode performing means (6) is further adapted to

- automatically establish a phone connection to the service centre (70) and/or the emergency call number and/or an authorised person if no call from the service centre (70) and/or the emergency call number and/or an authorised person is received in a second predetermined time period after operation of the emergency button (25).

21. Mobile phone (1) according to one of the claims 15 to 20,

characterised in that

the alarm mode performing means (6) is further adapted to

- automatically switch the mobile phone (1) on if it is in an off-state during the operation of the emergency button (25).

22. Mobile phone (1) according to one of the preceding claims,

characterised in that

the alarm mode performing means (6) is further adapted to allow a termination of the alarm mode only on receipt of a reset message by the communication means (3, 5) via the telephone communication network (40), the reset message comprising a reset authorisation code.

23. Mobile phone (1) according to one of the preceding claims,

characterised in that the mobile phone (1) further comprises:

- a microphone (13);
- an earphone speaker (14) for handset telephone communication; and
- an additional speaker (15) on the backside of the mobile phone (1) for hands free telephone communication;

wherein the microphone (13) is used for both handset and hands free telephone communication.

24. Mobile phone (1) according to one of the preceding claims,

characterised in that the mobile phone (1) further comprises

- display means (8, 9) for showing information; and
- read out means (6, 12, 14, 15) for automatically read out information shown by the display means (8, 9) based on a text to speech algorithm via a speaker (14, 15) of the mobile phone (1).

25. Mobile phone (1) according to one of the preceding claims,

characterised in that the mobile phone (1) further comprises

- self-test means (6, 12) being adapted to output tones of specified frequency and level to at least one speaker (14, 15) or buzzer (16) of the mobile phone (1) and to measure the input level of a microphone (13) of the mobile phone (1).

26. Mobile phone (1) comprising:

- communication means (3, 5) for communicating via a telephone communication network (40); and
- status detecting means (6) for detecting settings and status of the mobile phone (1);

characterised in that the mobile phone (1) further comprises

- status message compiling means (6) for compiling a status message comprising the settings and status information detected by the status detecting means (6);

wherein the communication means (3, 5) is adapted to send the status message via said telephone communication network (40) to a service centre or an authorised person.

27. Mobile phone (1) according to claim 26,
characterised in that the mobile phone (1) further comprises
- status setting means (6) for setting settings and status of the mobile phone (1);

wherein the status setting means (6) are adapted to set the settings and status of the mobile phone (1) based on a message received via the telephone communication network (40), the message comprising an authorisation code.

28. Mobile phone (1) comprising:
- communication means (3, 5) for communicating via a telephone communication network (40);
- a microphone (13); and
- an earphone speaker (14) for handset telephone communication;

characterised in that the mobile phone (1) further comprises
- an additional speaker (15) on the backside of the mobile phone (1) for hands free telephone communication;

wherein the microphone (13) is used for both handset and hands free telephone communication.

29. Mobile phone (1) comprising:
- communication means (3, 5) for communicating via a telephone communication network (40); and
- display means (8, 9) for showing information;

characterised in that the mobile phone (1) further comprises
- read out means (6, 12) for automatically read out information shown by the display means (8, 9) based on a text to speech algorithm via a speaker (14, 15) of the mobile phone (1).

30. Mobile phone (1) comprising:

- communication means (3, 5) for communicating via a telephone communication network (40);
- a microphone (13);
- a speaker (14, 15); and
- self-test means;

characterised in that

the self-test means (6) are adapted to output tones of specified frequency and level to at least one speaker (14, 15) or buzzer (16) of the mobile phone (1) and to measure the input level of the microphone (13) of the mobile phone (1).

31. Docking station for a mobile phone (1) preferably according to one of the preceding claims comprising:

- holding means for mechanically holding the mobile phone (1) in a stable position;
- contact means to provide electrical contact between the docking station and the mobile phone (1); and
- power supply means to load a battery (18) of the mobile phone (1) via said contact means;

characterised in that the docking station further comprises

- ID storing means to store and individual identification code of the docking station,

wherein the individual identification code of the docking station is provided to the mobile phone (1) via said contact means.

32. Docking station according to claim 31,

characterised in that the docking station further comprises

- data bus connection means to provide electrical contact between a data output means of the docking station and the mobile phone (1).

33. Docking station according to claim 30 or 31, **characterised in that** the docking station further comprises

- audio connection means to provide electrical contact between an audio input/ output means of the docking station and the mobile phone (1).